

Abstract Submitted
for the MAR15 Meeting of
The American Physical Society

Modeling the Lymphocytic Choriomeningitis Virus: Insights into understanding its epidemiology in the wild CHRISTY CONTRERAS, College of Liberal Arts and Sciences - Physics Department, Arizona State University, JOHN MCKAY, Applied Mathematics for the Life and Social Sciences, Arizona State University, JOSEPH BLATTMAN, SUSAN HOLECHEK, The Biodesign Institute, Arizona State University — The lymphocytic choriomeningitis virus (LCMV) is a rodent-spread virus commonly recognized as causing neurological disease that exhibits asymptomatic pathology. The virus is a pathogen normally carried among rodents that can be transmitted to humans by direct or indirect contact with the virus in excretions and secretions from rodents and can cause aseptic meningitis and other conditions in humans. We consider an epidemiological system within rodent populations modeled by a system of ordinary differential equations that captures the dynamics of the diseases transmission and present our findings. The asymptotic nature of the pathogen plays a large role in its spread within a given population, which has motivated us to expand upon an existing SIRC model (Holechek et al in preparation) that accounts for susceptible-, infected-, recovered-, and carrier-mice on the basis of their gender. We are interested in observing and determining the conditions under which the carrier population will reach a disease free equilibrium, and we focus our investigation on the sensitivity of our model to gender, pregnancy related infection, and reproduction rate conditions.

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Date submitted: 11 Nov 2014

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